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PTO/SB/92 (05-03)
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Application Number	09/995,336
Filing Date	11/27/01
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Art Unit	2856
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Attorney Docket Number	2464 US

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Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)

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accelerations and the resulting displacement due to turbulence etc. in the x-direction are relatively small and easier to control. Furthermore, compensation for accelerations in the x-direction are the most critical to attenuate for the van Kann dumbbell design for measuring $G_{zz}-G_{xx}$, as explained above. Consequently, in a mobile vehicle such as an aircraft, the combination of the translational isolation system with a gravity gradiometer of the van Kann dumbbell design for measuring $G_{zz}-G_{xx}$, both described in greater detail above, allows the gravity gradiometer to be most effectively sheltered from the specific accelerations that are the most detrimental to performance. The invention minimizes dominating acceleration-induced errors, and the above combination design specifically takes advantage of various synergies to minimize the most important accelerations and get the maximum benefits when considering the ' $G_{zz}-G_{xx}$ ' embodiment. Finally, it is recognized that although other gravity gradient components can be measured, the utility of $G_{zz}-G_{xx}$ is such that it can provide powerful information and therefore if desired, a single component system can be employed to take advantage of the discovered synergies above without the design effort required to include the measurement of other components.

If **606a** is a thirty megaton ore deposit at a distance ("h") of 1 km from gravity gradiometer **600** (ignoring, for a moment, mass **606b**), a linear displacement (\ddot{a}) of approximately 1×10^{-13} meters will occur and be detected. This linear displacement translates, for the exemplary gravity gradiometer **600**, into a rotation (\ddot{E}) of approximately 3×10^{-13} radian.

Referring to FIGS. 1-6, in operation aircraft **106** of gravity gradient measuring system **100** will take off from a runway with isolation system **206** in a stowed or locked position. In the stowed or locked position, the translation tables of CIM **224**, the magnetic levitation system of FIM **222** and gravity gradiometer **600** are in a fixed state so as to prevent any damage that may occur during takeoff. Prior to landing isolation system **206** is returned to the locked or stowed position for the same reason.